IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicants:	Christian Koeniger	§	Art Unit:	2855
		§		
Serial No.:	10/520,960	§	Conf. No.:	4786
		§		
Filed:	February 3, 2006	§	Examiner:	Mirellys Jagan
		§		
Title:	Subsea And Landing String Distributed Temperature Sensor System	§	Docket No.	101.0005US/PCT (SHL.0308US)
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Mail Stop **Appeal Brief-Patents**
Commissioner for Patents
P.O. Box 1450
Alexandria, VA 22313-1450

REPLY BRIEF

Dear Sir:

Applicant's Reply to the Examiner's Answer is set forth below.

1. **§ 103 Rejection of Claim 1**

In the Appeal Brief, Applicant points out that the Examiner errs in finding that Davidson discloses the desirability of obtaining temperature measurements along the length of a landing string. In response to Applicant's position, the Examiner contends, "Davidson suggests that it is desirable to measure the temperature at various locations from the platform into the well, i.e., distributed temperature measurements." Examiner's Answer, p. 7. However, the Examiner's position is untenable, as Davidson only discloses a single temperature sensor.

The Examiner contends that paragraph no. [0063] of Davidson discloses measuring the temperature down the tubing. Examiner's Answer, p. 7. Paragraph no. [0063] of Davidson is reproduced below:

> [0063] Referring to FIG. 18, in some embodiments of the invention, the sensors may include various sensors to detect the possibility of hydrate or wax buildup downhole. In this manner, the sensors may include a sensor 64i that is located in the central passageway of the production

tubing 74 to measure the flow of a particular fluid as well as other sensors 64j that measure various chemical and other properties downhole that typically accompany or precede hydrate or wax buildup. For example, the sensors 64j may include a temperature sensor, as the temperature is a key factor in the formation of wax deposits and hydrate formations. As another example, the sensors 64j may include deposition sensors, sensors that indicate the buildup of, for example, scale (calcium carbonates etc), ashphaltenes, etc.

As can be seen from the above-recited paragraph, however, Davidson fails to disclose measuring temperature at more than one point along the landing string 22. The Examiner's argument is further based on paragraph nos. [0029] and [0036], which are reproduced below:

[0029] The marine riser string 24 provides protection from the surrounding sea environment for strings that are run through the string 24 from the platform 20 and into the subsea well. In this manner, the landing string 22 may be run through the marine riser string 24 for purposes of installing completion equipment, such as a tubing hanger and a production tubing, in the subsea well.

[0036] In some embodiments of the invention, the module 60 includes a sea communication telemetry circuit 61 that communicates (via an umbilical cord, for example) with the platform 20 for purposes of communicating indications of various parameters and conditions that are sensed by sensors 64 of the landing string 22. A variety of different subsea communication techniques may be used. As depicted in FIG. 2, the sensors 64 may be part of the module 60. However, as described herein, in some embodiments of the invention, the sensor 64 may be located in other parts of the landing string 22, as well as possibly being located in the well tree and other parts of the subsea well.

Paragraph no. [0029] generally describes a marine riser string 24, without containing any discussion of temperature measurements along the landing string 22; and paragraph no. [0036] merely discloses sensors 64 of the landing string 22 but fails to discuss temperature measurements or distributed measurements along the landing string 22. As the temperature sensor 64j moves with the landing string 22, Davidson fails to disclose or render obvious obtaining temperature measurements along the length of the landing string 22.

Moreover, contrary to the position taken by the Examiner, Davidson fails to disclose measuring temperature in an interval between the platform and the ocean bottom; and therefore, Davidson fails to disclose or render obvious a distributed temperature system that is adapted to sense a parameter at various points along an interval along which Davidson's landing string 22 extends, where this interval extends from the platform toward the ocean bottom. In this regard, in paragraph no. [0063] Davidson describes the temperature sensor 64j as measuring a temperature inside the well (emphasis added). The Examiner's argument is premised on Davidson's landing string 22 (and temperature sensor 64j) being run from the platform to the well. Examiner's Answer, p. 7. However, the Examiner fails to identify any teaching of Davidson from which the skilled artisan would glean that the temperature sensor 64j is adapted to sense the temperature at points along an interval from the platform to the well.

Smith further fails to disclose or render obvious a distributed temperature system that is adapted to sense a parameter at various points along an interval from the platform toward the ocean bottom. In this regard, Smith only discloses the use of the optical fiber downhole beneath wellhead 9. However, the Examiner fails to address why the skilled artisan would have gleaned the use of Smith's optical fiber to sense a parameter at various points along an interval between an ocean bottom and a platform. To the extent Smith's optical fiber does traverse the interval between the ocean bottom and a platform, this occurs only during installation of the optical fiber when the optical fiber is being pumped into the alternative conduit. *See, for example*, lines 37-48 in column 7 of Smith. The skilled artisan would not have gleaned, however, from this disclosure the concept of adapting the optical fiber to measure a parameter at various points along the claimed interval while the optical fiber is being installed in the well.

Thus, Applicant maintains that the § 103 rejection of claim 1 is in error and should be reversed.

2. § 103 Rejection of Claim 8

The Examiner contends that via the wellhead 9, the optical fiber of Smith is purportedly attached to Smith's production tubing 8, which the Examiner labels as the purported landing string of claim 8. Examiner's Answer, p. 9. Applicant also points out

that Smith discloses, "a parallel tubing string (not shown) may be attached to the production tubing" and "inserted into the well." Smith, 6:1-4. However, either scenario fails to disclose or render obvious attaching a line containing a distributed sensor system to a landing string. In this manner, the Examiner's improperly construes "landing string" to encompass any tubular string, regardless of the function of the string. When all of the explicitly-recited language of claim 1 is assigned the proper weight that it is due, however, it becomes clear that the hypothetical combination of Davidson and Smith fails to disclose or render obvious a line containing a distributed temperature system, which is mechanically attached to a landing string; and as such, this combination thus, fails to disclose or render obvious the subject matter of claim 8.

Thus, Applicant maintains that the § 103 rejection of claim 8 is in error and should be reversed

3. § 103 Rejection of Claim 9

For at least the same reasons as discussed above for claim 8, Smith fails to disclose or render obvious a landing string, and Smith fails to disclose or render obvious conduit that is proximate to the landing string. Thus, Applicant maintains that the § 103 rejection of claim 9 is in error and should be reversed.

4. § 103 Rejection of Claim 10

The Examiner labels Smith's casing 13 as the control umbilical of claim 10. Examiner's Answer, p. 11.However, the Examiner is improperly reading the language "control umbilical" out of the claim, as under the Examiner's construction any tubular member, such as a casing, may be considered to be a "control umbilical."

Moreover, the Examiner errs in the factual findings pertaining to the rejection of claim 10. In this manner, in the rejection of claim 10, the Examiner contends that Smith's casing 13 is the purported control umbilical of claim 10 and further contends that Smith's production tubing 8 is the landing string (*see, for example*, Examiner's Answer, p. 10 in the discussion of claim 9). However, contrary to the position taken by the Examiner, Smith fails to disclose or render obvious that the casing 13 (the purported control umbilical of claim 10) is deployed as part of the production tubing 8 (the purported landing string of

claim 10). Instead, the passage cited by the Examiner states that the tubing string 11 is inserted with the casing string 13 (Smith, 5:65-67) or a parallel tubing string is attached to the production tubing string (Smith 6:1-4). Smith fails to, however, disclose or render obvious that the casing string 13 is deployed as part of the production tubing 8. To the contrary, Smith discloses that the production tubing 8 is inserted into the casing 13 after the casing 13 has been installed in the well and perforated. *See, for example*, Smith 4:43-48.

Thus, Applicant maintains that the § 103 rejection of claim 10 is in error and should be reversed.

5. § 103 Rejection of Claim 17

In the § 103 rejection of claim 17, the Examiner still fails to explain why the skilled artisan in possession of Davidson and Smith would have derived a system where the claimed line containing a distributed sensor system extends below the landing shoulder and above the landing shoulder, absent impermissible hindsight gleaned solely from the present invention. In this regard, merely combining these two references produces a system in which Smith's alternate path conduit containing an optical fiber is disposed below a landing shoulder and Davidson's single temperature sensor is disposed above the landing shoulder. This combination fails to, however, disclose or render obvious a line that extends above and below the landing shoulder and contains the claimed distributed sensor system. Therefore, although a further modification is required beyond the mere hypothetical combination of Davidson and Smith to derive the claimed invention, the Examiner fails to set forth any plausible reason to explain why the skilled artisan would have made the modification.

Thus, Applicant maintains that the § 103 rejection of claim 17 is in error and should be reversed.

6. § 103 Rejection of Claim 28

Applicant maintains that the § 103 rejection of claim 28 is in error and should be reversed for at least the reasons set forth in the Appeal Brief and the reasons discussed above in connection with claim 1.

7. § 103 Rejection of Claim 60

In the § 103 rejection of claim 60, the Examiner states in reference to Smith's alternative path conduit 11, "line (11) will be attached to the riser (24) of Davidson since the riser is what is used to deploy all of the elements below the water surface." Examiner's Answer, p. 12. This position taken by the Examiner is untenable, however, as the skilled artisan would appreciate that the riser protects strings that are run from the platform to the well (*see, for example*, Davidson, paragraph. [0029]). These elements are not attached to the riser, however; and it is unclear how Smith's conduit 11 could be deployed if it is in fact attached to Davidson's riser 24.

Thus, Applicant maintains that the § 103 rejection of claim 60 is in error and should be reversed.

The Commissioner is authorized to charge any fees or credit any overpayment to Deposit Account No. 20-1504 (SHL.0308US).

Respectfully submitted,

Date: 1-26-11

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APPENDIX OF CLAIMS

The claims on appeal are:

1. A system usable with a subsea well, comprising:

a riser extending from a platform adjacent an ocean surface towards an ocean bottom;

a landing string extending within the riser from the platform towards the ocean bottom; and

a line extending along at least part of a length of the landing string and including a distributed sensor system,

wherein the landing string extends in an interval within the riser from the platform toward the ocean bottom and the distributed sensor system is adapted to sense a parameter at various points along the interval.

8. The system of claim 1, wherein the line is mechanically attached to the landing string.

9. The system of claim 3, further comprising:

a conduit located proximate the landing string; and

the fiber optic line located within the conduit.

10. The system of claim 9, wherein the conduit is within a control umbilical deployed as part of the landing string.

17. The system of claim 1, wherein:

the landing string is landed on a landing shoulder located on a pressure control equipment; and

the line extends below the landing shoulder.

28. A method usable with a subsea well, comprising:

deploying a landing string within a riser, the landing string and riser extending from a platform on an ocean surface towards an ocean bottom;

deploying a line along at least part of a length of the landing string, the line including a distributed sensor system; and

measuring the parameter at the various measurement points along the length of the landing string,

wherein the act of deploying the line along at least part of a length of the landing string comprises deploying the line along an interval of the landing string extending above the ocean bottom such that the distributed sensor system is adapted to sense a parameter at various points above the ocean bottom.

60. The system of claim 1, wherein the line is attached to the riser.